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TAGS: [AORC](#) [ENRG](#) [IAEA](#) [KNNP](#) [TRGY](#)  
SUBJECT: IAEA SAFEGUARDS: SUPPORTING NOVEL TECHNOLOGIES

Classified By: AMBASSADOR GREGORY L. SCHULTE FOR REASONS 1.4 (B) AND (D)  
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This is an action request. Please see para 6.

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Summary  
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¶1. (S) The IAEA Safeguards Department's Division of Technical Support, Novel Technologies Unit (NTU) is compiling a database of all identifiable "indicators and signatures" of nuclear fuel cycle activity (including for weaponization of nuclear material). The NTU plans subsequently to undertake a systematic analysis of possible means for detecting indicators and signatures of undeclared nuclear activities and facilities. UNVIE sees strong support of this project as consistent with the overarching U.S. objective of enabling the strongest possible safeguards regime. Toward that end, UNVIE has been closely engaged with NTU personnel to help shape their effort in ways that are: 1) mindful of the need to ensure that the IAEA does not inadvertently provide potential proliferators with a de facto guide to countermeasures necessary to hide clandestine activities, and; 2) not at odds with U.S. equities related to U.S. national technical means (NTM) for detecting covert nuclear fuel cycle activities. UNVIE has suggested that the NTU consider technologies/techniques currently available, identify any gaps/shortcoming in relation to the identified indicators/signatures, and only then proceed in a prudent fashion --- in consultation with select member states (e.g. P5) -- to identify "novel" solutions for finding undeclared activities. Per para 6, UNVIE requests Department generate interagency-cleared guidance as soon as possible on supporting the IAEA's safeguards/novel technologies project that is appropriate in light of the two concerns identified above, in a way that is practical and cost effective. End Summary.

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Safeguards' Plan to Identify and Fill Capability Gaps  
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¶2. (SBU) The Safeguards Department's NTU is taking forward a project to systematically identify "all" indicators and signatures of nuclear fuel cycle activity, and then identify existing tools to find them. The ultimate goal is to identify where gaps exist for tools or methods to ensure states' safeguards declarations are correct and complete. The NTU has begun formulating a database that will be used to identify and analyze the technical gaps in the IAEA's tool kit and correlate them with possible technical solutions. NTU believes a key benefit of its database will be to help inspectors identify and understand the technical tools that are already available. On the other hand, where gaps exist

for safeguards tools to identify a given indicator or signature, the NTU hopes to lead an effort to investigate new tools, and to determine their feasibility, effectiveness, and practicality.

¶3. (C) The planned methodology uses the "Physical Model" of the nuclear fuel cycle (a DOE-developed reference tool already in use by the Safeguards Department) as a starting point for populating the database; the Physical Model already identifies well-known indicators and signatures. (Note: NTU defines an "indicator" as something inherent to a particular fuel cycle activity (e.g., precursors to uranium conversion).

NTU defines "signatures" as something that results from the nuclear fuel cycle "process" (e.g., gas emissions from spent fuel reprocessing). Taken together, indicators and signatures can be in the form of matter, information (e.g., open source or intelligence), and emanations. Beyond the Physical Model, other sources for filling the database will include inputs from other Safeguards Department support divisions, as well as Operations divisions and outside experts.

¶4. (S) MsnOffs, along with French and UK Mission reps, have underlined to NTU officers the sensitivities associated with their work, particularly: 1) the need to ensure that the IAEA does not inadvertently provide potential proliferators with a guide to countermeasures necessary to hide clandestine activities, and; 2) not inadvertently undermining key Member States' efforts to develop national technical means (NTM) for detecting covert nuclear activities, means that are better suited to NTM than to development and deployment by the IAEA.

We have also stressed that the project should not be driven by merely finding "novel" approaches, but finding the right approach, which might entail slight modifications to proven, practical, and existing tools. A rudimentary structure of the database has been built and designed to be compatible with Safeguards Information Management Division's IT systems security and quality and protocols. The database is currently being developed on a stand-alone system that is locked in an NTU office. In addition to identification of nuclear fuel cycle signatures and indicators, NTU will catalog signatures and indicators of weaponization activities in the database.

¶5. (C) NTU has requested select Member State expert assistance to validate its methodology, populate the database, and analyze the data. (Note: UNVIE worked with the French Mission to scuttle an earlier NTU plan to pursue an open conference, chaired by an NGO, to cast a wide net for all indicators, signatures, and relevant technologies to find them.) As a first step, a video conference was held Friday, January 23, with NTU and P3 (U.S., UK, France) mission and country experts at which NTU described its goals and methods, and sought suggestions on the best way to proceed. NTU expressed eagerness to ensure that P3 Member States would be comfortable with the design of the methodology and the security and control of the prospective database. During the videoconference, Member States' questions focused on the contents of the database, who would have access, how the database would be protected, and how NTU envisioned acquisition of information to populate the database and conduct analysis of its contents. At the meeting's conclusion, P3 reps agreed to return to the discussion with NTU in a follow-on video conference that NTU will seek to schedule soon.

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Action Request  
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¶6. (C) Action: Mission believes appropriate support to the NTU effort, while ensuring the two sensitivities outlined above are effectively addressed, is consistent with the broader U.S. objective of empowering the strongest possible IAEA safeguards regime. Mission requests the Department lead an interagency process to generate guidelines/instructions as soon as possible for USG support to the IAEA's novel safeguards technologies project. Ideally, Department may

wish to engage relevant officials and experts at DOE, DOD, and within the Intelligence Community to identify the scope of information that could be shared with IAEA/NTU to advance the IAEA's ability to detect undeclared activities and facilities-while not undermining U.S. NTM. Mission hopes that any such identified guidelines, while subject to periodic review, would provide the basis for relevant interactions with the Safeguards Department beyond the immediate NTU project. Mission has little doubt that as Safeguards officials continue to assess their future needs for a strong safeguards regime and new technologies, they will continue to ask occasionally for technical assistance of a sensitive nature.

SCHULTE